

REMARKS

The Applicant and the undersigned thank Examiner Blevins for a careful review of the present application. Consideration of this application is respectfully requested in view of the following remarks, which are responsive to the final Official Action mailed May 5, 2006.

Status of the Claims

Upon entry of this Amendment, Claims 2, 5, 8-11, 17, 18, 21, and 31-37 are pending in the present application. Claims 1, 3, 4, 6, 7, 12-16, 19, 20, and 22-30 have been canceled. Claims 2, 10, 11, 17, and 21 are the independent claims. The Examiner has rejected Claims 2, 5, 8-11, 17, 18, and 21. Without adding new matter, the Applicant has amended Claims 2, 5, 8-11, 17, 18, and 21 and has added new Claims 31-37.

Pending Claim Rejections

The Examiner rejected Claims 2, 5, 10, 17, 18, and 21 under 35 U.S.C. § 103(a) based on an assertion that each of these claims is obvious over U.S. Patent Number 4,898,451 to Story (hereinafter “*Story*”) in view of U.S. Patent Number 6,208,790 to Zopf et al. (hereinafter “*Zopf*”). The Examiner also issued a rejection under 35 U.S.C. § 103(a) of Claim 8 on grounds that *Story*, *Zopf*, and U.S. Patent Number 6,661,956 to Yamasaki et al. (hereinafter “*Yamasaki*”) render the claim obvious. Claim 9 was rejected as being obvious based on *Story*, *Zopf*, *Yamasaki*, and U.S. Patent Number 5,345,526 to Blew (hereinafter “*Blew*”). Finally, Claim 11 has been rejected on grounds of being obvious over *Story* in view of *Zopf* and *Yamasaki*. The Applicant offers the following remarks to traverse the pending rejections.

I. Claims 2, 5, 8, and 9 are patentable over the cited art

Claims 2 and 9

As amended, independent Claim 2 defines a cable that comprises: (i) a plurality of color-coded buffer tubes; (ii) color-coded filling material disposed in each of the color-coded buffer tubes; and (iii) a plurality of color-coded optical fibers disposed in each of the color-coded buffer tubes.

The plurality of color-coded buffer tubes provide a first level of color-coded identification, the color-coded filling material provides a second level of color-coded identification, and the color-coded optical fibers provide a third level of color-coded identification. Thus, the color-coded buffer tubes, the color-coded filling material, and the color-coded optical fibers provide three levels of color-coded identification.

Meanwhile, amended Claim 9, which depends from Claim 2, further requires that each optical fiber in the plurality of color-coded fibers is individually identifiable based on a unique three-dimensional color-code defined by color of the optical fiber, color of the buffer tube in which the optical fiber is disposed, and color of the filling material of the buffer tube in which the optical fiber is disposed. As amended, Claim 9 also requires that: (i) at least two buffer tubes have a common color; (ii) at least two filling materials have a common color; and (iii) at least two optical fibers have a common color.

The Applicant respectfully submits that *Story*, *Zopf*, *Yamasaki*, and *Blew* do not render amended Claims 2 and 9 obvious at least because each claim recites one or more features that are not disclosed, not taught, and not suggested by *Story*, *Zopf*, *Yamasaki*, *Blew*, or by a hypothetical combination thereof. Moreover, amended Claims 2 and 9 each recites a combination of features that *Story*, *Zopf*, *Yamasaki*, *Blew* do not individually or in combination disclose.

The Applicant further submits that combining the disclosures of *Story*, *Zopf*, *Yamasaki*, *Blew* using the teachings, suggestions, and disclosures of those references and/or ordinary skill would not yield the claimed invention, which requires three levels of color-coded identification.

The Applicant respectfully submits that the Examiner's own characterization of the cited art, a portion of which has been respectfully inserted below for the Examiner's convenience, provides support for the nonobviousness of the invention of amended Claim 2 and the invention of amended Claim 9. (Emphasis added.)

Regarding applicant's arguments concerning claims 10, 17, and 18, examiner maintains that *Story does suggest using a different color filling material for each buffer tube*, since *Story* discloses that the underlying purpose for using the color filling material is for identification of the buffer tubes and to the individual optical fibers therein (column 2, lines 4-52). *This purpose can only be achieved if a different color filling material is used for each buffer tube*, since *two buffer tubes filled with the same color filling material would be confused and not easily identifiable.*

However in contrast to the cited art, amended Claims 2 and 9 each requires three levels of color-coded identification that support identifying individual fibers in like-colored buffer tubes or buffer tubes having like-colored filling. Moreover, amended Claim 9 requires two commonly colored buffer tubes, two commonly colored fibers, and two commonly colored filling materials.

For illustrative purposes, consider the simplistic example of the table below in which a cable has two red tubes, two blue tubes, two red filling materials, two blue filling materials, four red fibers, and four blue fibers. Individual fibers and/or buffer tubes can be uniquely identified even if a cable has two buffer tubes with the same color, two fills of the same color, and two fibers of the same color. For example, the red fiber in the red-filled red tube is the only red fiber in a red-filled red tube and can be singularly identified as such. The blue fiber in the blue-filled red tube is likewise singularly identifiable, and so on.

Level 1 Color-Coded Tubes	Level 2 Color-Coded Fill	Level 3 Color-Coded Fibers
Red Tube 1	Red Fill	Red Fiber, Blue Fiber
Red Tube 2	Blue Fill	Red Fiber, Blue Fiber
Blue Tube 1	Red Fill	Red Fiber, Blue Fiber
Blue Tube 2	Blue Fill	Red Fiber, Blue Fiber

The above example has been presented to the Examiner in these Remarks for explanatory purposes and is not intended to limit the claimed invention in any way. As discussed at paragraphs 0021 through 0024 of the present patent application, multi-level color coded identification schemes can be used to uniquely identify each optical fiber in a cable that has a large number of optical fibers.

The Examiner has asserted that “Story also teaches color-coded fibers (column 1, lines 5-28).” The Applicant respectfully disagrees with the Examiner and submits that *Story* in fact discusses color-coded fibers at lines 5-28 of column 1 to point out problems with color-coded fibers that his technology attempts to avoid by not using color-coded fibers.

Accordingly, the Applicant respectfully submits that the disclosure, teachings, and suggestions of *Story* contrast with the recitations of Claims 2 and 9, as amended, and that *Story* teaches away from the claimed invention rather than providing a suggestion to combine color-coded fibers, color-coded buffer tubes, and color-coded filling materials. More specifically, the Applicant submits that *Story* teaches using fibers of the same color, not color-coded fibers as required by each of amended Claims 2 and 9.

For the Examiner's convenience, recitations of *Story* supporting this position (lines 13-23 of column 1 and lines 16-23 of column 2) follow, with underlines added for emphasis.

Known prior art suggests color coding of the plastic surrounding the individual fibers and/or colored tapes grouping individual fibers in a common bundle. While colored fibers have been widely accepted by craftsman as a means of fiber identification, colored tapes or threads used for bundle or group identification have not been without complaints. It would be desirable to group 48 fibers into four separate groups, the fibers in each group having a fiber coating of the same color as a fiber in another group. ... Wax can be readily and easily colored, thus giving rise to an easy and convenient way to identify the group to which fibers in a given buffer tube belong. Colored wax permits coated optical fibers of the same color to be used in a given cable construction, yet providing a convenient device to distinguish fibers of the same color from one another.

In summary, the Applicant respectfully submits that the cited references fail to disclose a cable with three levels of color-coded identification as required by amended Claims 2 and 9 and further that the cited references, if combined as alleged, would not yield the claimed invention.

Claims 5 and 8

As amended, Claim 5 and 8 each recites features and combinations of features further defining the present invention over the cited art. Accordingly, the Applicant requests separate and individual consideration of these two dependent claims, as well as all the independent claims that are pending in the present application.

In view of the foregoing discussion of distinctions between the references that the Examiner has cited and amended Claims 2, 5, 8, and 9, the Applicant respectfully submits that each of these claims is allowable over those references. Accordingly, the Applicant courteously requests for the Examiner to withdraw the pending rejections of Claims 2, 5, 8, and 9.

II. Claims 10 and 31 are patentable over the cited art

As amended, Claim 10 is an independent claim defining a cable that comprises a plurality of buffer tubes that each comprises circumscribing identifier marks attached thereto at regular length intervals. The Examiner has cited *Yamasaki* alleging that the reference discloses coding optical fibers with marking stripes.

While *Yamasaki* may disclose longitudinal strips, the Applicant respectfully submits that this reference does not disclose a plurality of buffer tubes that each comprises circumscribing identifier marks attached thereto at regular length intervals in accordance with the requirements of Claim 10, as amended. Moreover, the Applicant submits that *Yamasaki*'s longitudinal stripes contrast with the circumscribing identifier marks of amended Claim 10. See *Yamasaki*, Figure 1 and column 3, lines 36-44.

As amended, Claim 10 further requires a combination of filling material color, optical fiber color, and the identifier marks to uniquely identify each optical fiber in the cable. As discussed above with reference to Claim 2, the Applicant submits that the cited references fail to disclose using three colors to uniquely identify each optical fiber in the cable.

New Claim 31, which depends from Claim 10, further requires at least three individually identifiable fibers to have a common color, at least three buffer tubes to have a common color, and at least three buffer tubes to have a common marking code. The Applicant submits that the cited art does not disclose, teach, or suggest this feature as required by Claim 31.

In view of the above, the Applicant respectfully submits that amended Claim 10 and new Claim 31 are distinguishable from the cited references and thereby courteously requests for the Examiner to withdraw the pending rejection of Claim 10 and to allow both claims.

III. Claims 11, 17, 18, and 32-37 are patentable over the cited art

As amended, Claim 11 defines a system that comprises, among other things, a plurality of transparent or translucent buffer tubes, each having an inner wall circumferentially surrounding a respective set of optical fibers and a gelatinous color-coded filling material disposed within the buffer tubes. The gelatinous color-coded filling material homogeneously fills essentially all volume between the respective sets of fibers and the respective inner walls of the buffer tubes.

Meanwhile, amended Claim 17 defines a system that comprises a plurality of transparent or translucent buffer tubes providing an internal volume, color-coded optical fibers, and color-coded gelatinous filling material. The color-coded optical fibers and the gelatinous filling material occupy essentially all of the internal volume.

The Applicant submits that each and all of the references that the Examiner has cited fail to disclose the invention of Claim 11 and the invention of Claim 17. The Examiner has particularly cited *Story* as allegedly disclosing fiber optic cables that comprise color-coded fill material in buffer tubes.

While *Story* may disclose colored materials that are disposed in buffer tubes, this reference does not disclose gelatinous color-coded filling material homogeneously filling essentially all volume between the respective sets of fibers and the respective inner walls of the buffer tubes in accordance with the requirements of Claim 11, as amended. Nor does *Story* disclose color-coded optical fibers and color-coded gelatinous filling material occupy essentially all of the internal volume of a buffer tube as required by amended Claim 17.

In contrast to these respective requirements of amended Claims 11 and 17, *Story* discloses a buffer tube that contains a “free-standing composite” of colored wax and optical fibers, with filling compound disposed in the voids between the wax and the optical fibers. See *Story*, Abstract, Figures 1 and 2, and column 1, lines 45-53.

Accordingly, the Applicant submits that amended Claims 11, 17, and 18, and new Claims 32-37, which depend from Claim 17, are allowable over the cited references respectfully requests such allowance.

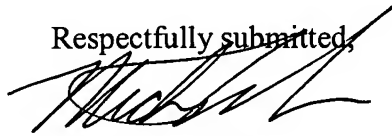
IV. Claim 21 is patentable over the cited art

As amended, Claim 21 defines a method for producing a color coded optical fiber. The Applicant submits that the cited references, taken individual or in an alleged combination, fail to disclose each and every step required by the method. Accordingly, the Applicant requests further consideration of this claim and for the Examiner to withdraw the pending rejection thereof.

CONCLUSION

The foregoing is submitted as a full and complete response to the Official Action mailed May 5, 2006. The Applicant thanks Examiner Blevins for consideration of the amendments and remarks presented by this paper. The Applicant has shown that the pending claims are allowable, and allowance of the claims is respectfully requested. It is believed that this response places the application in condition for allowance. Such action is courteously requested. If there are any issues that can be resolved with an Examiner's Amendment or a telephone conference, a telephone call to the undersigned at 404.572.3486 is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Michael L. Wach', written over the typed name.

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